

APPENDIX III

REPORT OF POST-GRADUATION 2009

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1. Post-graduation: Master and PhD programs

The School of Health Sciences formally started to offer master and PhD programs, in accordance with the Bologna legislation, in the academic year 2009/2010. Specifically, the School presently offers a Master program in Health Sciences, a PhD program in Health Sciences and a PhD program in Medicine, in which 12, 12 and 9 students enrolled in the present academic year. Of notice, the PhD program in Health Sciences shares with the Medical School of the University of Coimbra and with the Faculty of Medical Sciences, New University of Lisbon an inter-institutional program in Aging and Degeneration of Complex Biological Systems, in which students from the three universities rotate for advanced courses and laboratory rotations. The programs include a first curricular year composed of advanced courses (for which the list of 2009/2010 is specified in #2) and laboratory rotations (for which the themes proposed in the present academic year are listed in #3), which is then followed by the preparation of the thesis project and launching of the thesis project. For each laboratory rotation a specific set of skills is established.

2. Advanced courses

The postgraduate offer of ECS has been diversified in recent years with a substantial increase in courses and workshops dedicated to the highly specialized training of medical doctors and researchers in the biomedical sciences. In the year 2009 in addition to the 19 courses included in the international postgraduate program, 5 courses as part of formal programs of doctoral and master's degrees, also opened to external participation, were offered by ECS. Below are listed all the courses and workshops proposed for 2009. Detailed information on the courses and workshops is available at (<http://www.ecsaude.uminho.pt/>).

Leading the Path in Cataract Surgery: Sub-2mm Cataract Surgery

Vitor Soares, Fernando Silva, Nuno Sousa

10th January

Drug Treatment of Psychiatric and Neurological Disorders

An European Neuroscience Schools Course (EURON)

Joana Palha, Nuno Sousa

9th -13rd February

Animal Cell and Tissue Culture: From Basic Principles to Advanced Techniques

António Salgado, Margarida Saraiva, Sandra Costa

16th – 20th February

Fundamentals in Neurosciences: Morphological and Behavioral Approaches

José M. Pêgo, João C. Sousa

9th -13rd March

An Overview of Common Methods and Procedures Used to Set Exam Standards

Manuel João Costa

18th March

Hands-on Course on Gynecological Laparoscopy

Jorge Correia-Pinto, Estêvão Lima, António Alves, Tiago Henriques-Coelho

23rd – 25th March

International Hands-on Course in Fetal and Neonatal Endoscopic Surgery

Jorge Correia-Pinto, Estêvão Lima, António Alves, Tiago Henriques-Coelho

26th – 28th de March

Gene Silencing Using RNA Interference: Lectures and Hands-on

Elsa Logarinho, Paula Ludovico

2nd – 5th June

Applications of Flow Cytometry in Biomedical Research

Paula Ludovico, Margarida Correia-Neves

15th – 17th June

Neuroimmune Interactions

Within the COST action Neurinfnet

Joana Palha, Nuno Sousa

22nd – 27th June

Neurosurgical Workshop: Vascular and Tumor Surgery

Carlos Alegria, Manuel Cunha Sá, Rui Almeida

26th – 27th June

Fundamentals in Neuroscience

José M. Pêgo, João C. Sousa

21st September – 2nd October

Microsurgical Anastomosis

Pedro Leão, Nuno Sevivas, Mário Oliveira, Braga dos Anjos

24th – 26th September

Fundamentals in Immunology and Infection

Paula Ludovico, Gil Castro

6th – 16th October

3rd Minimally Invasive Surgical Week in Laparoscopy, Endoscopy and N.O.T.E.S.

Jorge Correia-Pinto, Estêvão Lima, José L Carvalho, Novo de Matos

12th – 16th October

Fundamentals of Genetics, Development and Neoplasia

Jorge Correia-Pinto, Raquel Andrade, Rui M. Reis

19th – 30th October

Laboratory Animal Science, 5th Edition

(according to FELASA category C recommendations)

Magda Carlos, Margarida Correia Neves

9th – 20th November

Hands-on Course: Sulci, Gyri, Ventricles and Fibers Dissecting 7th Edition

Nuno Sousa, Carlos Alegria, Evandro de Oliveira

16th – 20th November

Biostatistics in health sciences

Pedro Oliveira

23rd November – 4th December

Bioinformatics in health sciences

Raquel Andrade

7th – 18th December

Courses postponed

Hands-on Course: Treatment and Quantitative Analysis of Digital Images

Elsa Logarinho
26th - 31st January

Assessment Methodologies in Occupational Health

Amaro Domingues, Mário Freitas
4th – 8th May

An Introduction to the MicroRNA World

Raquel Andrade, Isabel Palmeirim
10th – 12th September

Leading the Pathway in Cataract Surgery: Last Generation of Accommodative Lens

Vítor Soares, Fernando Silva, Nuno Sousa
7th November

2.1 Sponsors

To run the international postgraduate programme, we obtained financial support from several companies: Bonsai Technologies, VWR International, ENZIfarma, INOPAT, Olympus, Roche, Sarstedt, Industrial Laborum, Bioportugal, Bio-Rad and Tadinense. Due to several different constraints only ENZIfarma, INOPAT, Olympus, Bioportugal, Bio-Rad and Tadinense effectuated the financial support. We are grateful to our sponsors for the helpful contribution for this international program of courses and workshops in biomedical sciences.

2.2 Global Assessment

In 2009 the International Postgraduate Programme included novel courses in diverse scientific areas and also new editions of courses that have been very successful in previous years and that continue to represent areas of demand among the participants. In particular, for the fifth consecutive year we offered the training on “Laboratory Animal Science”, which provides international certification for research using animal models. The course “Hands-on Course: Sulci, Gyri, Ventricles and Fibers Dissecting” also had its 7th edition reinforcing the relevance of the new laboratory of neurosurgery for advanced training. Among the multiplicity of courses and workshops offered we would like to also highlight the “3rd Minimally Invasive Surgical Week: Laparoscopy, Endoscopy and NOTES” that allowed the specialized training of medical doctors on the third generation surgery, a novel and emerging area on surgery. Similarly, but more devoted to researchers in biomedical sciences we had the third edition of the course “Animal Cell and Tissue Cultures: From Basic Principles to Advanced Techniques”.

The main goal of the post graduation at ECS is to offer a highly specialized training for medical doctors and investigators in biomedical sciences as well as to improve and promote the medical education, an emergent research area that aims to improve individual’s abilities to teach. Therefore, we intend to continue offering training in multiple areas through the organization of novel courses every year, but also by promoting additional editions of courses for which the demand is evident.

2.2.1 Participants Background

In 2009, we have a total of 424 participants in the courses and workshops. Figure 1 presents the participant’s professional background distribution in 2009. During the year 2009 the vast majority of the participants have as background “Biological Sciences” but it is grateful to realize that the ECS courses and workshops have attracted a considerable number of clinicians, which we intend to promote further.

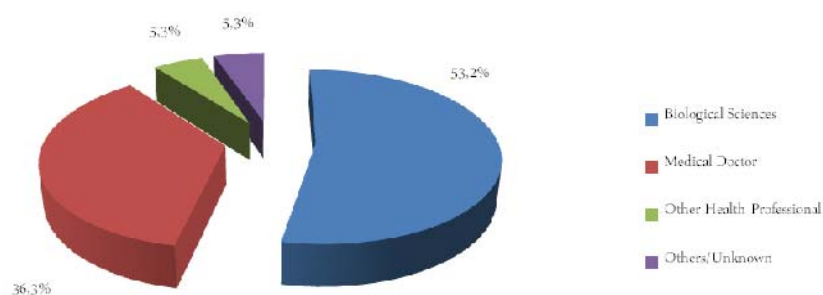


Figure 1 - Background distribution of the participants ("Other Health Professionals" include participants having as background pharmacy, psychology or clinical analysis and public health; "Others" include participants having as background polymer, biotechnological, biological, food technology or chemical engineering).

The participants belong to different national and international institutions as presented in Figure 2.

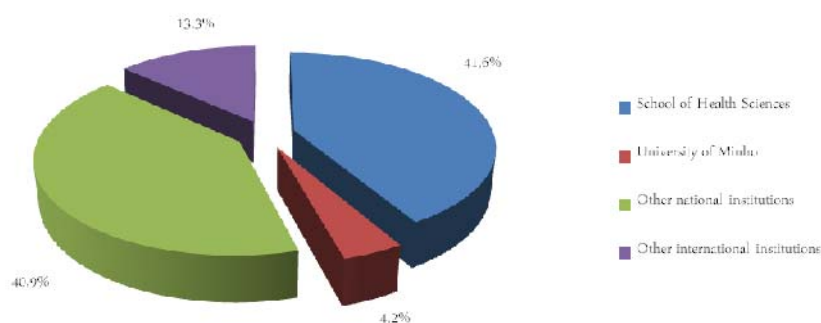


Figure 2 – Participants affiliation.

The vast majority of the participants belong to University of Minho and to Portuguese Institutions other than the University of Minho, which is very representative of the growing acceptance of our programme in the national biomedical research and medical communities. Of relevance, 13% of the participants originate from foreign institutions, which highlight the ability of the program to attract as well investigators and medical doctors from other countries.

2.2.2 Evaluation Results

A questionnaire was filled by 334 out of the 424 total participants to evaluate several aspects of each course. The overall evaluation provided the results presented in Figure 3: excellent (35%), Very good (51%), Good (12%), Sufficient (2%), Weak/Poor (0%).

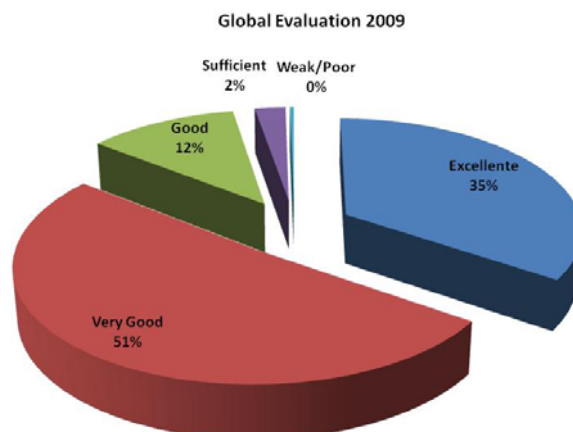


Figure 3 – Evaluation results.

In most cases, participants considered that the courses should be repeated in years to come, and would recommend it to a peer, which represents a great incentive to continue and consolidate the programme.

3. Laboratory rotations

The laboratory rotations were offered from the three research domains at the Life and Health Sciences Research Institute, which is a research unit, part of the School, rated as Excellent by the Portuguese Science Foundation evaluation panel. In justified instances, students could choose external laboratories for their laboratory rotations.

Students were given the opportunity to choose among the following options:

Microbiology and infection Research Domain

- Role of IL-17 and IL-10 in intramacrophage mycobacterial growth
- Evaluation of virulence factors among Asiatic Mycobacterium tuberculosis strains
- Molecular mechanisms of IL-10 gene regulation
- Impact of the lipidic toxin mycolactone in the effector mechanisms of phagocytes
- Study of the toxicity promoted by the expression of α -synuclein in yeast aged cells: the role of the autophagic pathway
- Hsp90 chaperone a IRES-mediated regulator of apoptosis in mammalian and yeast cells
- Towards a molecular system in *Paracoccidioides brasiliensis*: downregulating the end-joining pathway
- Differential response to *Candida albicans* and *C. non-albicans* of human cells carrying the Asp299Gly polymorphism in TLR4

- Yeast model of Batten disease: response to stress agents
- Nitric oxide synthase expression during embryonic neurodevelopment in the Cln3 Δ ex7/8 mouse model for Batten disease
- Infection of the thymus by mycobacteria: is the thymus able to mount an immune response?
- How (in)dependent are the effects of corticosterone and cytokines in depression?

Neurosciences Research Domain

- Choroid plexus in multiple sclerosis: neuroprotective or neurodeterimental?
- The choroid plexus as an immune-sensor for the brain
- Combinatory effect of temozolomide with anti-RTKs drugs in glioblastomas
- Influence of HOXA9 expression in the cellular response to chemotherapy.
- Relevance of HOXA9 expression in the prognosis of glioblastoma patients.
- Studying the specificity of nanoparticle based systems for targeted drug delivery in Microglial Cells
- Modulation of Schwann cell growth by FMSS based scaffolds aimed at SCI regeneration
- Effects of the secretome of criopreserved and non-criopreserved human umbilical cord stem cells on central nervous system cells
- Genetic study of X-linked mental retardation (XLMR): validation of a gene panel for diagnosis
- Molecular determinants of ataxin-3 knockouts thermoresistance phenotype
- Phenotypical characterization of *C. elegans* Isu1-deficient animals
- C. elegans* as a model to unravel the molecular and cellular basis of epilepsy
- Insights into the pathogenesis of Machado-Joseph disease: study in a transgenic mouse model
- Modeling Machado-Joseph disease pathogenesis in *C. elegans*: search for modifier genes
- Identification of compounds that modulate ataxin-3 aggregation and neurological dysfunction in a *C. elegans* model of Machado-Joseph disease
- Characterization of neudesin ontogenic and histological expression profile
- Neudesin impact in the nervous system – behavioural and structural studies in neudesin-null mice
- Novel mechanism of stress-induced mood and cognitive dysfunction – the path from depression to Alzheimer's Disease
- Gender-dependent neurodegenerative role of stress: A link between stress and human tauopathies
- Antenatal exposure to dexamethasone increases susceptibility to addiction: molecular and neurochemical correlates

- Understanding the neuronal substrate of probabilistic decisions in rats
- How does cognitive stimulation work?
- Divergence and convergence on neural pathways implicated in pain processing
- The effect of chronic corticosteroid administration upon descending pain modulation mediated by the hypothalamus
- The role of hypothalamic plasticity in depression
- The cognitive role of hippocampal neurogenesis in depression

Surgical Sciences Research Domain

- Endothelium-derived factors as modulators of fetal lung growth: a strategy looking for a therapy for congenital diaphragmatic hernia
- Molecular mechanisms of temporal-spatial control of embryonic lung development
- One step forward on the dissection of the embryonic molecular clock mechanism
- Role of MAPK signaling pathway activation in solid tumors
- Characterization of the metabolism in MCT positive cancer cells
- Sensitivity of cancer cells to MCT inhibitors
- Study of genetic susceptibility factors for solid cancer development